## Claims:

1. A compound of the general structure (I)

 $HC(CRR'R'')(CRR'R'')] + [M_2X_9]^{-}(I)$ ,

5 in which

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R is independently hydrogen or a group of the formula M'R<sup>1</sup>R<sup>2</sup>R<sup>3</sup>,

R' is a group of the formula M'R4R5R6,

R" is hydrogen, a C1 to C12 alkyl, a C6 to C14 aryl or a C7 to C20 alkylaryl,

M is Zr or Hf,

10 M' is Si, Ge, Sn or Pb,

X is a halogen atom, and  $R^1$  to  $R^6$  is a  $C_1$  to  $C_{12}$  alkyl group, a  $C_6$  to  $C_{14}$  aryl or a  $C_7$  to  $C_{20}$  alkylaryl.

- 2. A compound according to claim 1 wherein M' is Si or Sn.
- 3. A compound according to claim 1 with the general structure (Ia)

 $HC(CHRR')_2] + [M_2X_9]$  (Ia), wherein

R is a group of the formula SiR<sup>1</sup>R<sup>2</sup>R<sup>3</sup>,

R' is a group of the formula M'R4R5R6,

R" is hydrogen, a C<sub>1</sub> to C<sub>12</sub> alkyl, a C<sub>6</sub> to C<sub>14</sub> aryl or a C<sub>7</sub> to C<sub>20</sub> alkylaryl,

M is Zr or Hf,

M' is Si, Ge, Sn or Pb,

X is a halogen atom, and

 $R^1$  to  $R^6$  is a  $C_1$  to  $C_{12}$  alkyl group, a  $C_6$  to  $C_{14}$  aryl or a  $C_7$  to  $C_{20}$  alkylaryl.

4. A compound according to claim 1 with the general structure (Ib)

 $[HC(CHRR')_2]^+[M_2Cl_9]^-$  (Ib), in which

R, R', and M denote for the groups stated in claim 1 and  $R^1$  to  $R^6$  denote for methyl.

5. A catalyst of the general structure (I) according to any of claim 1 to 4.

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- 6. A catalytic composition comprising a compound of the general structure (I) to any of claim 1 to 4.
- A process for homo- or co-polymerizing isoolefines, optionally in the presence of further copolymerizable monomers, in the presence of a compound of the general structure (1) according to any of claim 1 to 4.
  - 8. A process according to claim 7 wherein isobutene is polymerized.

9. A process according to claim 7 wherein isobutene and isoprene are polymerized.

- 10. A process according to claim 8 or 9 wherein the monomer/monomers are polymerized in the presence of one or more co-polymerizable monomers.
- 11. A metalorganic compound comprising a non-coordinating anion of the general structure  $[M_2X_9]^-$  in which M is Zr or Hf and X is a halogen atom.
- 12. A method of homo- or copolymerizing an olefin in the presence of a compound comprising an anion of the general structure [M<sub>2</sub>X<sub>9</sub>] in which M is Zr or Hf and X is a halogen atom.
  - 13. A compound comprising a cation of the general structure (III)

[HC(CRR'R")(CRR'R")] + (III),

- in which R is independently hydrogen or a group of the formula M'R<sup>1</sup>R<sup>2</sup>R<sup>3</sup>, R' is a group of the formula M'R<sup>4</sup>R<sup>5</sup>R<sup>6</sup>,
  - R" is hydrogen, a  $C_1$  to  $C_{12}$  alkyl, a  $C_6$  to  $C_{14}$  aryl or a  $C_7$  to  $C_{20}$  alkylaryl, M' is Si, Ge, Sn or Pb, and
  - $R^1$  to  $R^6$  is a  $C_1$  to  $C_{12}$  alkyl group, a  $C_6$  to  $C_{14}$  aryl or a  $C_7$  to  $C_{20}$  alkylaryl.
  - 14. A method of of stabilizing a compound of the general structure (II)

 $[HC(CRR'')(CRR'R'')] + [M_2X_9]$  (II),

in which

R is a group of the formula M'R<sup>1</sup>R<sup>2</sup>R<sup>3</sup>,

R" is hydrogen, a  $C_1$  to  $C_{12}$  alkyl, a  $C_6$  to  $C_{14}$  aryl or a  $C_7$  to  $C_{20}$  alkylaryl,

M is Zr or Hf,

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M' is Si, Ge, Sn or Pb

X is a halogen atom, and

 $R^1$  to  $R^3$  is a  $C_1$  to  $C_{12}$  alkyl group,

with a compound R' of the formula M'R<sup>4</sup>R<sup>5</sup>R<sup>6</sup>, in which M' is Si, Ge, Sn or Pb and

10  $R^4$  to  $R^6$  is a  $C_1$  to  $C_{12}$  alkyl group.